

Appl. No. 10/509,099
Arndt, dated January 18, 2006
Reply to Office action of November 1, 2005
Atty. Docket No. AP930USN

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Cancelled)

2. (Currently amended) An antenna according to claim [[1]] 3 , wherein the flexible metal electrode comprises a ground plane (17).

3. (Currently amended) An antenna according to claim 1 or 2 An antenna comprising an antenna element (11), an adjacent flexible metal electrode (17A) and control means (22) for effecting a dimensional change of the antenna element and/or between the antenna element and the flexible metal electrode so as to adjust a resonance frequency of the antenna and tune the antenna for operation at different frequencies, wherein the flexible metal electrode comprises a membrane (17A) overlain by the antenna element (11) and the control means comprises means (22) for effecting a change in spacing between the antenna element and flexible metal electrode.

4. (Currently amended) An antenna according to claim 1 An antenna comprising an antenna element (11), an adjacent flexible metal electrode (17A) and control means (22) for effecting a dimensional change of the antenna element and/or between the antenna element and the flexible metal electrode so as to adjust a resonance frequency of the antenna and tune the antenna for operation at different frequencies, wherein the means for effecting dimensional change comprises circuitry for applying a potential difference (V_d) between the flexible metal electrode and a second electrode so as to deflect the flexible metal electrode electrostatically relative to the second electrode.

5. (Currently amended) An antenna according to claim 1 An antenna comprising an antenna element (11), an adjacent flexible metal electrode (17A) and control means (22) for effecting a dimensional change of the antenna element and/or between the antenna element and the flexible metal electrode so as to adjust a resonance frequency of the antenna and tune the antenna for operation at different frequencies, wherein the means for effecting a dimensional change comprises means for applying a pneumatic force upon the flexible metal electrode (17A) so as to deflect the electrode relative to the antenna element.

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6. (Currently amended) An antenna according to claim 1 An antenna comprising an antenna element (11), an adjacent flexible metal electrode (17A) and control means (22) for effecting a dimensional change of the antenna element and/or between the antenna element and the flexible metal electrode so as to adjust a resonance frequency of the antenna and tune the antenna for operation at different frequencies, wherein the means for effecting a dimensional change comprises a means for applying thermal heating or cooling to effect thermal expansion or contraction and induce bending of the flexible metal electrode (17A) so as to deflect the electrode relative to the antenna element.

7. (Currently amended) An antenna according to claim [[1]] 3, wherein the flexible metal electrode (17A) comprises a single metal film.

8. (Currently amended) An antenna according to claim 1 An antenna comprising an antenna element (11), an adjacent flexible metal electrode (17A) and control means (22) for effecting a dimensional change of the antenna element and/or between the antenna element and the flexible metal electrode so as to adjust a resonance frequency of the antenna and tune the antenna for operation at different frequencies, wherein the flexible metal electrode (17A) comprises a laminate fabricated from layers of conducting metal and/or non-conducting dielectric.

9. (Previously presented) An antenna according to claim 3, wherein the flexible metal electrode (17A) comprises at least one conductive coating on a surface of a flexible insulating/dielectric film.

10. (Currently amended) An antenna according to claim 1 An antenna comprising an antenna element (11), an adjacent flexible metal electrode (17A) and control means (22) for effecting a dimensional change of the antenna element and/or between the antenna element and the flexible metal electrode so as to adjust a resonance frequency of the antenna and tune the antenna for operation at different frequencies, wherein the flexible metal electrode (17A) is perforated.

11. (Currently amended) An antenna according to claim 1 An antenna comprising an antenna element (11), an adjacent flexible metal electrode (17A) and control means (22) for effecting a dimensional change of the antenna element and/or between the antenna element and the flexible metal electrode so as to adjust a resonance frequency of the antenna and tune the antenna for

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operation at different frequencies, wherein the flexible metal electrode is connected to a support by a plurality of hinge portions.

12. (Previously presented) An antenna according to claim 11, wherein the flexible metal electrode comprises a medial portion and at least two integral hinge portions whereby the medial portion is attached to the support, the hinge portions flexing to allow movement of the medial portion relative to the antenna.

13. (Previously presented) An antenna according to claim 11, wherein the medial portion is rectangular and the hinge portions are at opposite sides thereof.

14. (Previously presented) An antenna according to claim 11, wherein the hinge portions are corrugated.

15. (Currently amended) An antenna according to claim 1, An antenna comprising an antenna element (11), an adjacent flexible metal electrode (17A) and control means (22) for effecting a dimensional change of the antenna element and/or between the antenna element and the flexible metal electrode so as to adjust a resonance frequency of the antenna and tune the antenna for operation at different frequencies, wherein the flexible metal electrode (17A) is non-planar.

16. (Previously presented) An antenna according to claim 15, wherein at least a medial portion of the flexible metal electrode (17A') is corrugated.

17. (Previously presented) An antenna according to claim 15, wherein the flexible metal electrode (17A') has a flat middle portion (23) and corrugated marginal portion (24).

18. (Previously presented) An antenna comprising an antenna element, a flexible metal electrode, a second electrode and control means, the flexible metal electrode comprising a membrane extending between the antenna element and the second electrode and the control means comprising circuitry for establishing a potential difference between the flexible metal electrode and the second electrode so as to deflect the flexible metal electrode electrostatically relative to the second electrode and antenna element and thereby adjust a resonance frequency of the antenna.